



EuroWestNile

European West Nile R&D collaborative project



2nd EuroWestNile Annual Meeting, 15-16 March 2012, Brescia - Italy

WP9: Data from ground and space

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<http://gis.cri.fmach.it>



ISTITUTO AGRARIO DI SAN MICHELE ALL'ADIGE

Fondazione Edmund Mach

Objective 1: Impact of temperature and precipitation

Spatialized meteo data times series

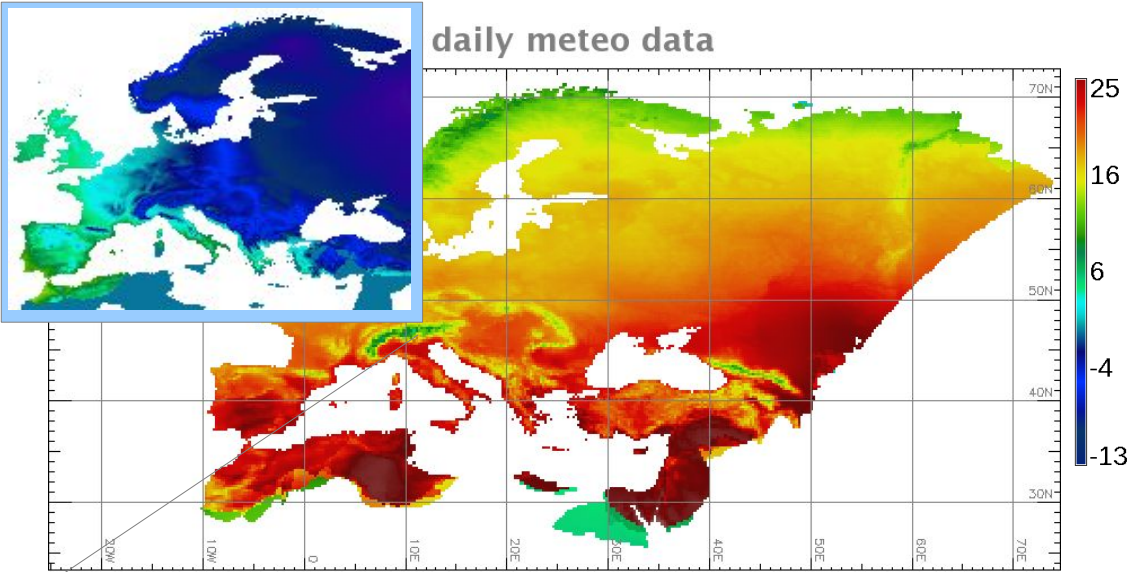
Monthly Tmean: 1950-2010

(derived from EU Ensemble Gridded data ECAD)

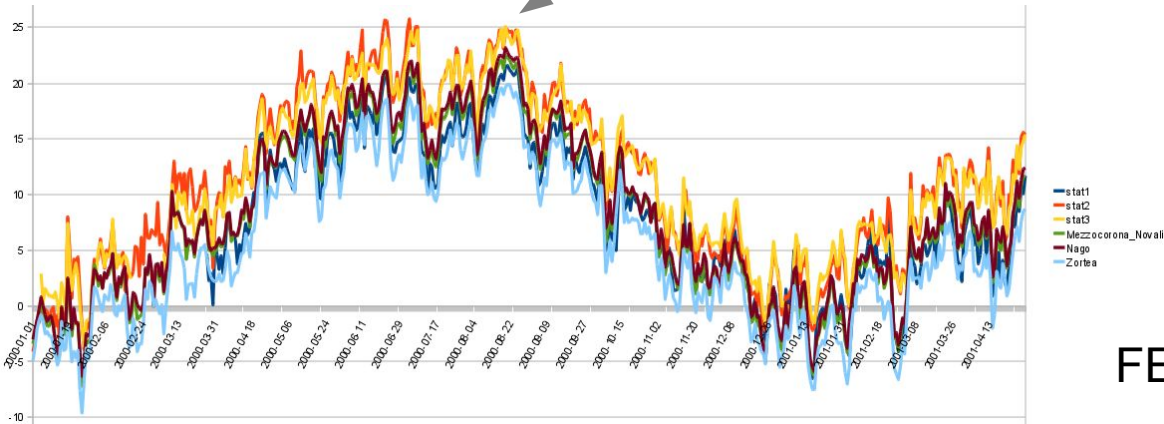
Climatic variable	Coefficients [§]	Value	Std. Error	t value	Pr (> t)
Annual total precipitation	All	-3.814	1.226	-3.112	**
	Pos	-1.477	2.027	-0.729	0.467
	Neg	-2.129	1.600	-1.331	0.185
	Diff.Pos.Neg	0.652	2.568	0.254	0.800
Annual min temperature	All	0.019	0.006	3.424	***
	Pos	0.005	0.010	0.535	0.593
	Neg	0.018	0.006	3.032	**
	Diff.Pos.Neg	-0.013	0.011	-1.134	0.257
Annual max temperature	All	0.034	0.005	7.524	***
	Pos	0.037	0.008	4.448	***
	Neg	0.028	0.005	5.499	***
	Diff.Pos.Neg	0.009	0.009	0.938	0.349

[§]All, slope for all provinces pooling data; Pos, slope for positive provinces; Neg, slope for negative provinces; Diff.Pos.Neg, difference in slopes between positive and negative provinces.
**P≤0.01.
***P≤0.001.

doi:10.1371/journal.pone.0004336.t003



<http://eca.knmi.nl/>



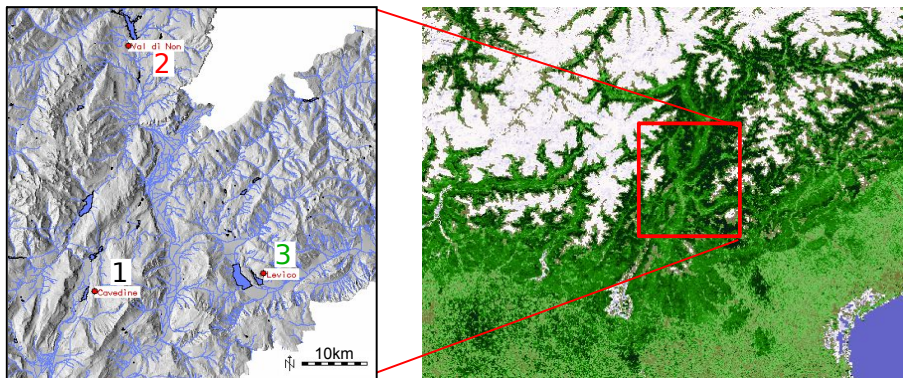
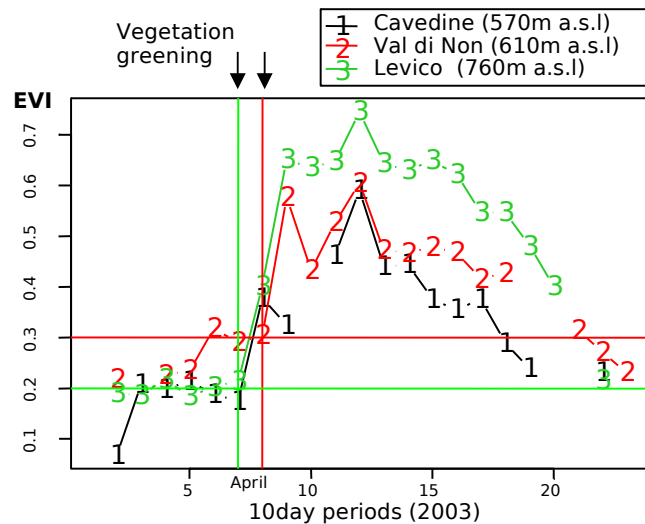
FEM meteo vs ECAD

PGIS unit @ FEM

Enhanced Vegetation Index (EVI)

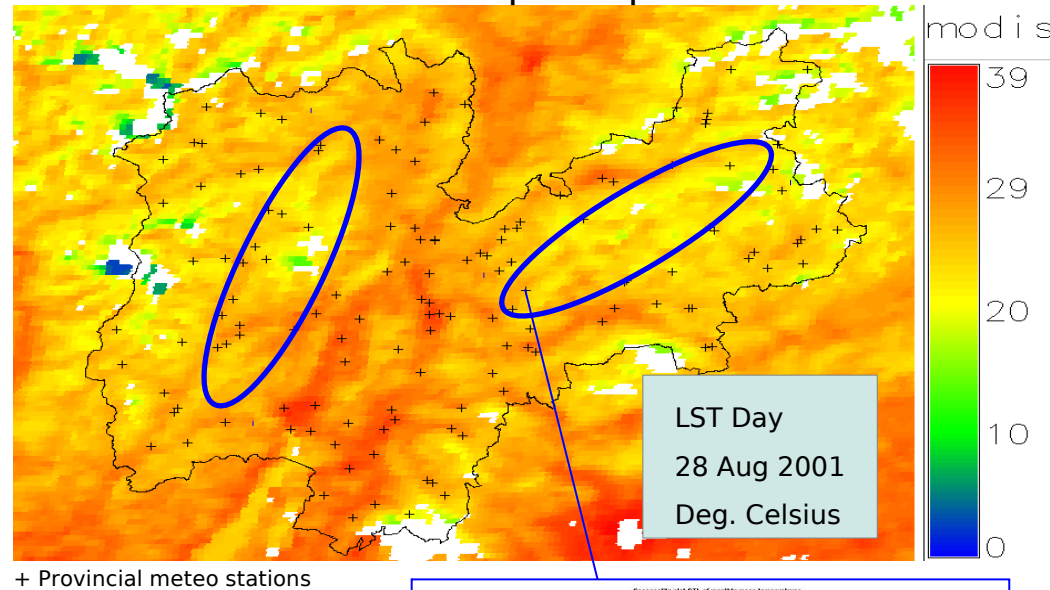
"Spring detection" example: Trentino 2003

Effect of valley orientation and exposition

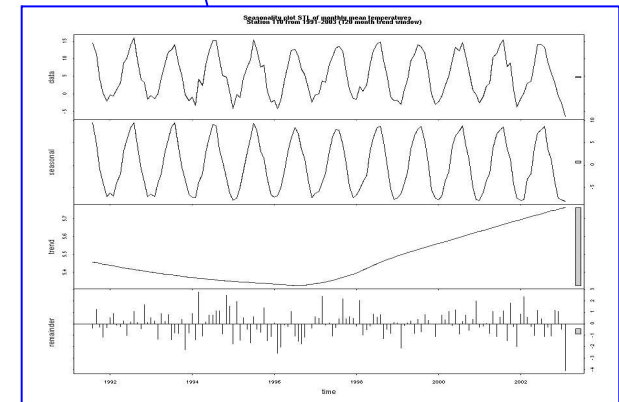


LAND SURFACE TEMPERATURE (LST)

Data enhancements in complex Alpine terrain



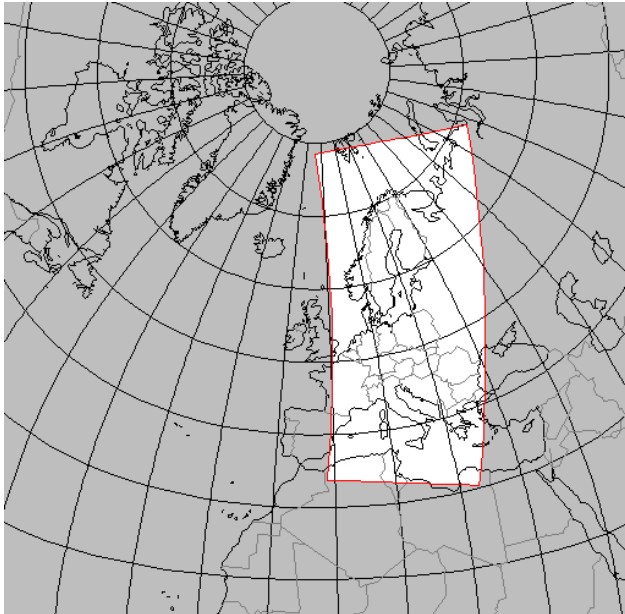
Temperature
trends
from meteo
station



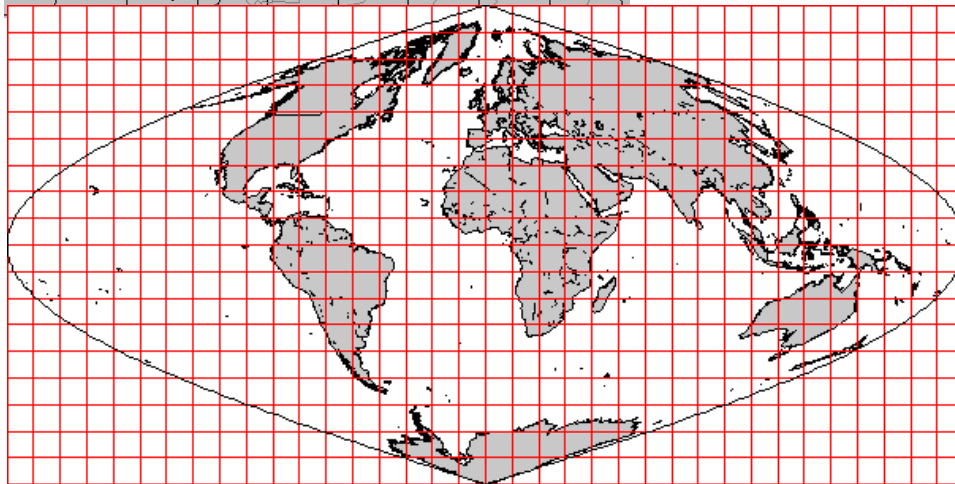
The MODIS Sensor: 11 years of data



The MODIS sensor on board of Terra and Aqua satellites



*Typical MODIS
overpass and
data coverage
(map tiles)*



Sensor with 36 channels in the range of optical light, near and thermal infrared: **Vegetation state, snow, temperature, fire detection ...**

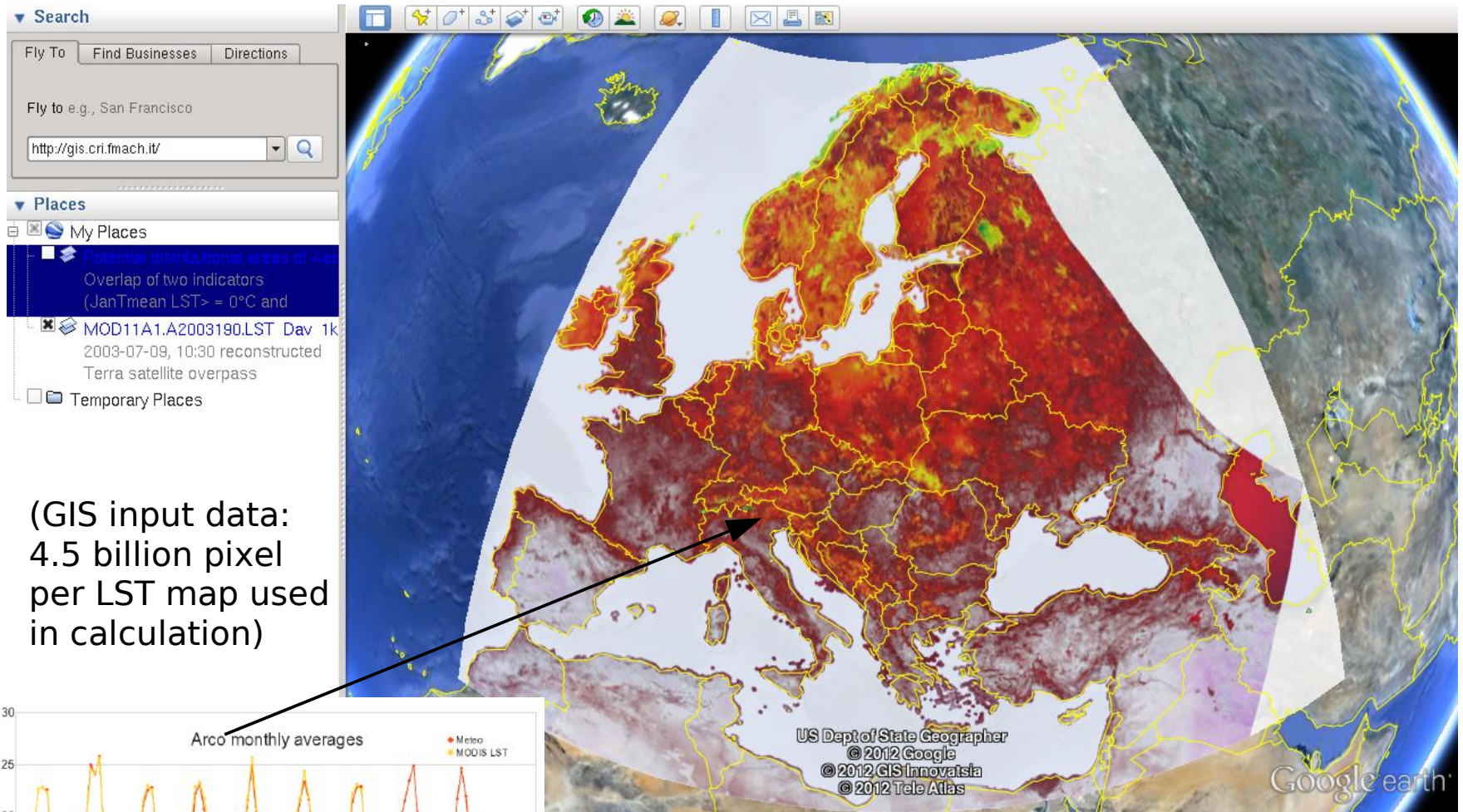
Delivers data at 250 m, 500 m and 1000 m pixel resolution

4 overpasses per day



*FEM-PGIS
Cluster
(300 nodes,
32 TB)*

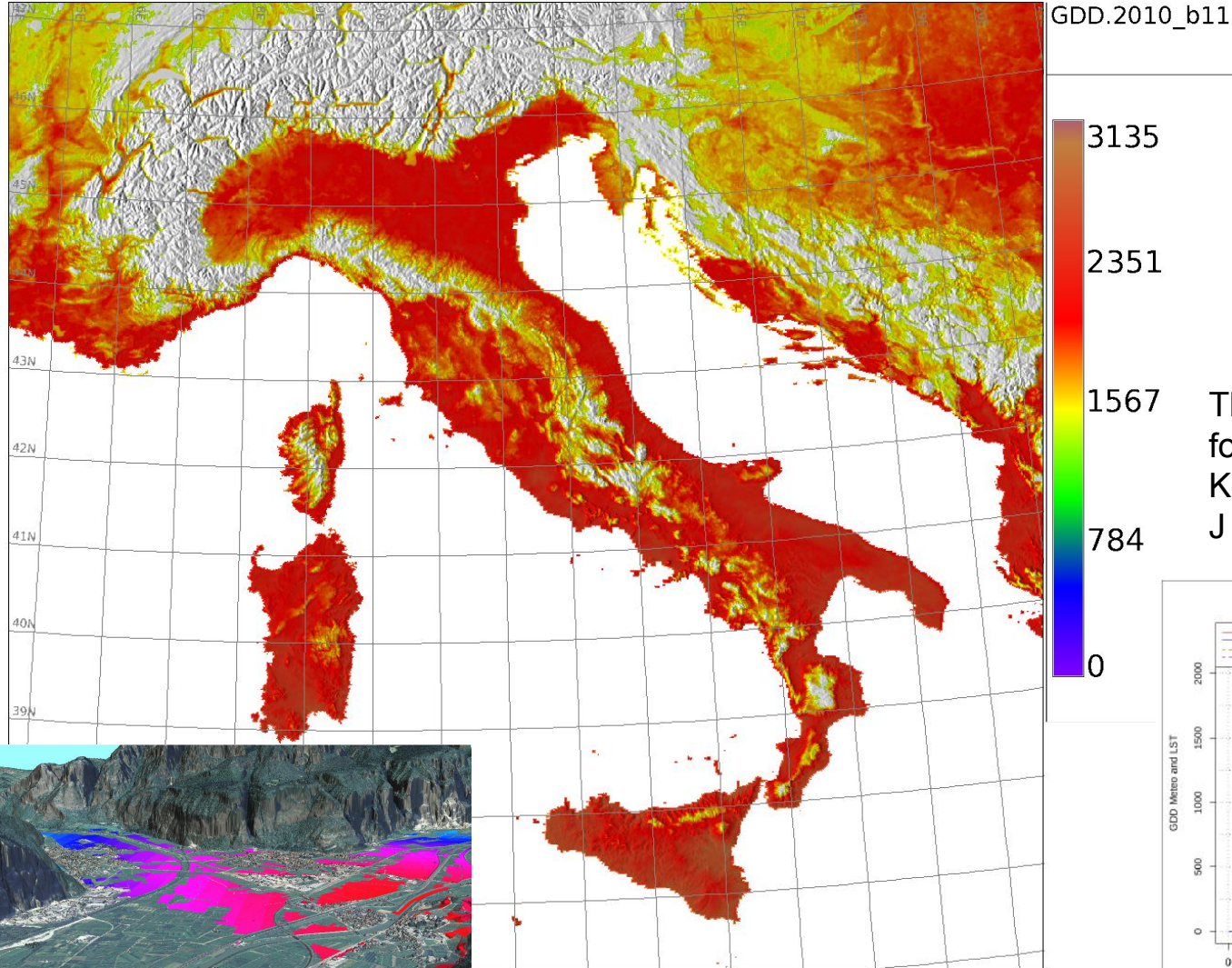
The new European MODIS LST time series



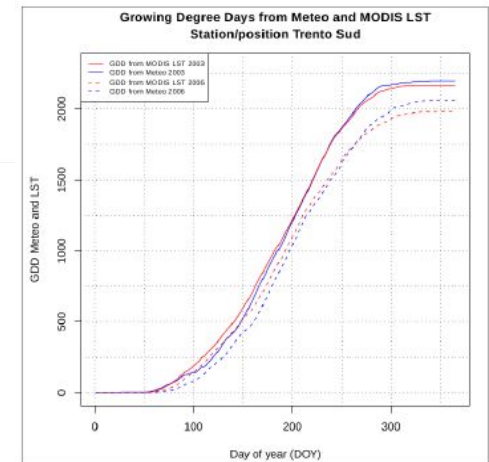
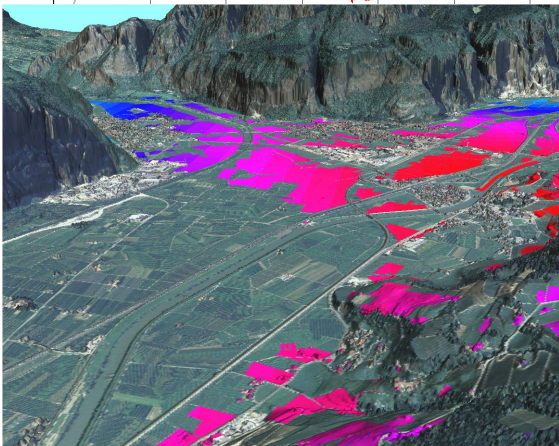
**European
MODIS LST mosaic**
reconstructed with
multivariate approach
Metz & Neteler, in prep.

**250m resolution
4 maps per day
data since 2000**

Threshold map >1350 GDD from MODIS LST



Threshold of 1350 GDD
for *A. albopictus* after
Kobayashi 2002.
J Med Entomol, 39:4-11.



Neteler et al., 2011: *Int J Health Geogr*, 10:49,
<http://www.ij-healthgeographics.com/content/10/1/49>

Acknowledgements

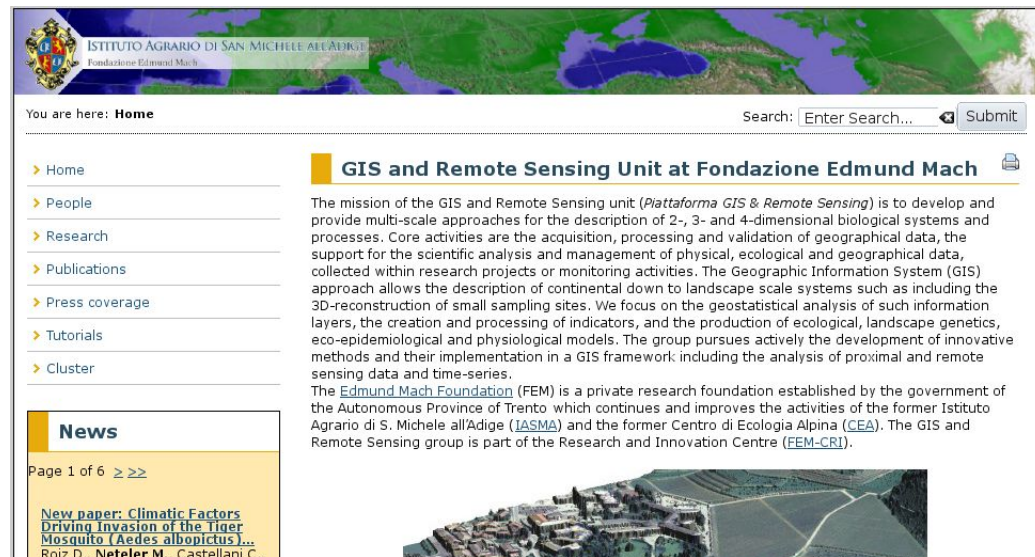
FEM-CRI

Luca Delucchi
Markus Metz
Annapaola Rizzoli

NASA + USGS

... for providing the
MODIS LST raw data

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GIS and Remote Sensing Unit at Fondazione Edmund Mach

The mission of the GIS and Remote Sensing unit (*Piattaforma GIS & Remote Sensing*) is to develop and provide multi-scale approaches for the description of 2-, 3- and 4-dimensional biological systems and processes. Core activities are the acquisition, processing and validation of geographical data, the support for the scientific analysis and management of physical, ecological and geographical data, collected within research projects or monitoring activities. The Geographic Information System (GIS) approach allows the description of continental down to landscape scale systems such as including the 3D-reconstruction of small sampling sites. We focus on the geostatistical analysis of such information layers, the creation and processing of indicators, and the production of ecological, landscape genetics, eco-epidemiological and physiological models. The group pursues actively the development of innovative methods and their implementation in a GIS framework including the analysis of proximal and remote sensing data and time-series.

The **Edmund Mach Foundation (FEM)** is a private research foundation established by the government of the Autonomous Province of Trento which continues and improves the activities of the former Istituto Agrario di S. Michele all'Adige ([IASMA](#)) and the former Centro di Ecologia Alpina ([CEA](#)). The GIS and Remote Sensing group is part of the Research and Innovation Centre ([FEM-CRI](#)).

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Roz D. Neteler, M. Castellani, C...